PUBLIC HEALTH REPORTS

VOL. 52 OCTOBER 15, 1937 NO. 42

DERMATITIS AMONG A GROUP OF OFFICE WORKERS FOUND NOT TO BE OF OCCUPATIONAL ORIGIN

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In an office employing about 750 men and women doing clerical work, considerable unrest was caused by a rumor that cases of dermatitis were occurring among the personnel which was due to handling the carbon copies with which they worked. The rumor started because it was noticed that the boy whose work it was to distribute the carbon copies among the workers had an eruption on his hands. A number of cases of dermatitis of the hands and other parts of the body were immediately called to the attention of the first-aid nurse in attendance and to the business manager in charge of the office, and in a month's time, about 25 such cases had been reported. Some of the workers went for treatment to clinics and private physicians, and several of the cases had been diagnosed as occupational dermatitis due to carbon paper, although the physician making the diagnosis had conducted no study of the exact work performed by the patient, nor had any patch tests been made. A number of the other cases had been diagnosed as mycotic infections, and the patients believed that they had contracted the infection from handling the papers which had been handled by others affected with mycotic infections.

The workers became so alarmed that they appointed a committee to wait on the business manager to whom this committee declared themselves and fellow workers unwilling to continue work unless the boy who was suspected to have spread the infection was ordered to stay away from work until cured. They also demanded that an investigation be made as to the cause of the outbreak. The committee stated that they believed the outbreak of dermatitis was due to the spread of the infection by means of the papers which were being passed from one clerk to another in the course of their work, or to the carbon on the carbon copies of certain papers which they all handled, or to the dyes on the colored paper on which the carbon copies were made. As a result of this agitation, the business manager wrote the following letter to one of the authors:

> This is to confirm my telephonic request of January 5, 1937, for an investigation and examination of a skin condition which exists at the present time among a number of employees in this office.

There are approximately 750 persons employed here, doing general clerical work. The greater majority of these, and I believe all those affected by this condition, handle pay-roll sheets and cards. These pay-roll sheets come to us from many offices scattered throughout the New England States and New York State. Many of those affected have been treated by their private physicians, and have all brought in certificates stating that they are suffering from one form or another of occupational skin ailment. The news of this skin condition has so spread among the employees here as to create a mental hazard, and I feel that, in order to curb this idea that an epidemic is imminent, we should have such an investigation and examination as I have requested.

Your cooperation will be greatly appreciated.

All of the workers affected in the office investigated had taken leave of absence on account of dermatitis for various lengths of time. One worker had been absent 2 weeks. Others were absent for a few days only. (Twenty-five cases of skin affections of various kinds among 750 persons does not seem to be higher than the usual rate of skin affections occurring among the general population.)

The large majority of the workers in this office are engaged in checking carbon copies of pay rolls and cards of various colored papers. Only four of the workers affected with dermatitis actually handle carbon paper of any kind. The pay-roll sheets come from hundreds of offices scattered throughout the New England States and New York State and the carbon paper used in making up these pay-roll sheets is purchased from many different sources. The pencils used in checking the figures on the pay-roll sheets consist of carbon in colored metal casings, the color on which is in the enamel and is absolutely fast, failing to "bleed" even when boiled in hot water for some time.

Dermatitis due to carbon paper is not frequently reported. The United States Monthly Labor Review of April 1929 (pp. 782 and 783) gives carbon paper as one of 34 known agents which were reported to have caused dermatitis in a group of 390 cases of industrial dermatitis that were reported by hospital clinics and workmen's compensation boards. In reviewing some 5,000 cases of industrial dermatitis reported and classified by the various States from 1932 to 1936, there were found five cases in which the probable cause of dermatitis was stated to have been carbon paper. All of these cases were in females, presumably typists. There were no data as to whether the cause was definitely established or merely assumed. In the query files of the United States Public Health Service, Office of Dermatoses Investigations, there were found two queries from physicians asking about the possibility of contracting dermatitis from carbon paper or hectograph and typewriter ribbons. We have been unable to find any cases reported where a diagnosis of dermatitis from carbon paper was definitely established by patch tests, and no cases reported as presumably due to contact with carbon copies of papers.

In observing the method of work performed by the clerks in the office under investigation, it was noted that, in checking the carbon copies of the pay-roll sheets, the hand holding the pencil rests on the sheet and the fingers of the other hand are employed in holding the edge of the card or pay-roll sheet in order to steady it. A contact dermatitis from the cards or pay-roll sheets, therefore, would presumably first manifest itself on the thenar or hypothenar eminence of the right hand and the tips of the fingers of the left hand and on the ulnar surface of the forearms as they rest on the pay-roll sheets, because these are the areas of the skin which come in direct contact with the paper. Some of the workers also handle cards which are filed in an open-top file. The left forearm and the hand rest over the tops of the series of cards which stand on edge, and in sorting them the fingers of the left hand are used. The cards are of various colors and it is possible that a person hypersensitive to the dyes on these cards may contract a dermatitis of the fingers and forearms of the left hand. However, the cases of dermatitis occurring among the workers handling these cards did not occur on that portion of the hand or forearm which came in contact with the cards.

Twenty patients actually presented themselves for examination. The presumptive clinical diagnoses in 13 of these cases were dermatophytosis and dermatophytids. In three cases the diagnoses were seborrhea or psoriasis. There was one case of sycosis of the beard, one of ichthyosis, and one was a definite case of wrist-watch dermatitis. The boy who distributed the pay-roll sheets and who was suspected by the workers to be the source of the infection had a nummular eczema (fig. 1).

It will be noted that at least six of the infected persons had conditions which in no way could be connected with their occupation. Nine of the remainder, including the suspected boy, consented to be patch tested with samples of the materials with which they came in contact during the course of their occupation. The others refused to be "guinea-pigs", as they termed it.

Pink paper, green paper, yellow paper, a piece of unused carbon paper, three different carbon copies, and pieces of developed blueprint paper were used in patch testing. The patches were allowed to remain on for 72 hours in 8 of the cases and in 1 case for 96 hours. There were no positive reactions underneath any of the patches, nor were there any delayed reactions 3 days after the patches had been removed. The dye had "bled" from the colored paper and had dyed the skin as did, of course, the violet color of the carbon paper, but there were no signs of any inflammatory reactions. Scrapings were made from the interdigital spaces of the toes and from the lesions on the hands of 13 of the workers examined and in only one of the cases was a mycelial thread found, and that was from a scraping on the

hand (fig. 2). This patient stated that she had had a similar eruption 7 years previously while she was employed as an X-ray technician in a hospital.

In order to learn whether it were possible that pathological fungi were transmitted on the paper by contact, all of the workers examined were requested to handle the same piece of unused white paper and then the pieces of this paper were cultured and examined microscopically, but no pathological fungi could be demonstrated.

As the carbon copies of the papers handled by the workers were made from about 100 different kinds of carbon paper manufactured by various manufacturers, it was impossible to patch test with all of the different kinds. It was decided, therefore, to ask the manufacturers to send us samples of all the carbon papers which they sold to the offices in which these carbon copies of pay-roll sheets were made, and to inform us of the ingredients used in each of the samples. Replies were received from 12 of the manufacturers, and it was learned that each of these manufacturers make many kinds of carbon papers which vary in composition. The simplest ones contain carnauba wax, paraffin wax, oleic acid, mineral oil, and carbon black. Some of the more complicated compositions may have, in addition to the above ingredients, beeswax, montan wax, petroleum jelly, castor oil, lard oil, stearic acid, pitch, lamp black, and synthetic dyes such as methyl violet, crystal violet, milori blue, victoria blue, negrosine, and various toners such as tungstate blue toner and tungstate purple toner.

The carbon paper used in patch testing the nine workers was of complex composition and was found to contain carnauba wax, montan wax, paraffin wax, petroleum jelly, oleic acid, stearic acid, castor oil, pitch, lamp black, carbon black, paris blue, milori blue, methyl violet base, crystal violet, and blue base; and so when no reactions were obtained on any of the workers patched with this paper, it probably indicated that they were not hypersensitive to any of the carbon copies handled in that office.

The tests and their object were explained to the workers, who, when they saw the results, were convinced that their dermatitis was not caused by the papers which they handled and their fears and agitation subsided. They were advised, however, to use clean white blotting paper on which to rest their hands when working on the carbon copies of the pay-roll sheets or on the colored cards, so as to prevent soiling their hands and forearms with the carbon which might come off the copies.

We became interested in the question as to the sensitivity of patients with skin diseases to the ingredients in carbon paper. We, therefore, patch-tested 50 patients, affected with various types of dermatitis and eczema, with 12 different kinds of carbon paper of known compositions.

FIGURE 1.—Nummular eczema suspected by the workers to be the source of the cases of dermatitis.

FIGURE 2.—Type of dermatitis seen among the workers and thought by them to be of occupational origin but proved otherwise.

These samples of carbon paper contained combinations of all the chemicals known to be used in the manufacture of carbon paper as previously enumerated. The patients patch-tested were suffering from the following conditions, and some of the patients had a combination of two skin diseases:

Contact dermatitis	29
Seborrheic eczema and eczema	9
Dermatophytosis and dermatophytid	15
Lichen simplex	1
Total	54

We are indebted to Miss E. Malozzi, of the New York Post-Graduate Hospital, for her assistance in carrying out these patch tests.

There were no positive reactions obtained on any of the patients tested. This would indicate that hypersensitivity to carbon paper is rare even among those affected with skin diseases.

It was thought that perhaps a visit to the manufacturers of carbon paper for an examination of the workers engaged in the process of producing the paper might reveal some authentic cases of dermatitis caused by the chemicals handled. Accordingly, a study of the process of carbon-paper manufacture and an examination of the workers engaged in it were made in one factory. The following is a brief description of the process:

Paper used in the manufacture of carbon paper is purchased in rolls from the paper manufacturers and comes in different kinds—thin to thick—and of various colors. The coating of carbon on the paper is prepared in a large pot in which carnauba wax, paraffin wax, beeswax, castor oil, oleic acid, powdered dyes, and other ingredients are melted and mixed. The mass, when allowed to cool, becomes solid, and is then further mixed in a mixing mill or in special grinders, so that it becomes a homogeneous mixture. It is then taken to the machine where the actual coating of the paper is done. A roll of paper is put at one end of the machine and the paper is unrolled and is allowed to pass over a metal roller, the under surface of which dips into a hot molten mixture of the carbon coating. This puts a film of the coating on one side of the paper. The coated paper is then cooled so that the carbon film on it solidifies, and it is then rolled on to another roll. The coated paper is then inspected for flaws and cut to size.

This factory also manufactures typewriter and hectograph ribbons as well as hectograph inks. Typewriter ribbons and hectograph ribbons are made from fine cotton or silk, which is cut into proper widths and then run through an ink bath which saturates the ribbon with ink. The ribbon is then passed between two rolls to press out the excess ink. The inked ribbon is then rolled on large rolls from which it is cut to size and placed on spools for the typewriter.

Hectograph ribbons contain a greater concentration of the dyes than do ordinary typewriter ribbons.

The inks used on typewriter and hectograph ribbons contain no wax but do contain the dyes mentioned as being contained in carbon paper, and these inks may also contain red dyes, such as red barium lake, magenta, and rhodamine B base. Other dyes may be used to produce different colored hectograph inks. Mixtures of alcohol, glycerine, acetic acid, gum, and castor and linseed oils are used as solvents for these dyes.

The hands and arms and faces and clothing of the workers in this factory are covered with the dyes and other chemicals used in the manufacture of the inks, papers, and ribbons, but no cases of occupational dermatitis have ever occurred there. At the end of the day's work, the dye is removed from the hands of the workers by first rubbing in vaseline, which absorbs most of the dye. The vaseline is then wiped off with a cloth. The hands are then washed in soap and water; and if there is still some dye remaining, the hands are dipped in a weak solution of potassium permanganate and then into a weak solution of sodium bisulphide. This removes practically all the dye.

Although it is possible or even probable that cases of occupational dermatitis may occur among workers in factories manufacturing these products, if they should be hypersensitive to any of the various chemicals and dyes used in their work, yet all of the factories replying to our queries stated that they had no such cases. Typists, stenographers, hectograph, "ditto" machine, and stencil-machine operators and other office workers are much less exposed to the action of these chemicals than are the workers engaged in the manufacture of carbon paper, typewriter ribbons, etc., and cases of dermatitis proved to be caused by these products are of even rarer occurrence among the latter group.

SUMMARY

A supposed outbreak of occupational dermatitis among a group of 750 office workers was investigated, and from a study of the cases and of the work processes and from the results of patch tests performed with the materials handled, it was found that the skin diseases were of various kinds and were not of occupational origin.

Patch tests performed on 50 clinic patients suffering from skin diseases showed that none of them was sensitive to any of 12 different kinds of carbon paper which, in the aggregate, contained all of the usual dyes and chemicals used in the manufacture of carbon papers.

A factory and its workers engaged in the manufacture of carbon paper, typewriter ribbons, hectograph ribbons, and hectograph inks were examined and the process of manufacture was studied, and no cases of occupational dermatoses were found although the skins of workers were covered with the various chemicals used.

CONCLUSIONS

Before a diagnosis of occupational dermatitis is made in an office worker, the physician should obtain an accurate clinical history, should study at first hand the actual work performed, and should make patch tests with the substances handled by the worker. If he neglects to do this, he may cause unjustified alarm among the workers and unnecessarily disrupt the business of the office.

Proved cases of occupational dermatitis from carbon paper and carbon copies are exceedingly rare.

STUDIES ON THE INFECTION OF DOGS WITH TROPHOZOITES OF *ENDAMOEBA HISTOLYTICA* BY THE ORAL ROUTE

A Preliminary Report[1]

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The observations of a few workers indicate that, at least under certain conditions, there is a possibility that the trophozoites of *Endamoeba histolytica* may produce infection in a susceptible host when taken by the oral route. In 1905, Craig (*1*) stated that by far the most successful manner in which to produce amoebic dysentery in kittens was by feeding the animals infected feces containing numerous motile forms. The inoculum was mixed with milk and fed to kittens which had been kept without food for 24 hours. Sixty-five percent of the animals were infected in this manner. Walker and Sellards (*2*) (1913) produced amoebic infection in three of four human volunteers who were fed material from dysenteric stools containing numerous motile trophozoites. The incubation periods in the three infected subjects were 1, 4, and 44 days, respectively, indicating, in the first two cases at least, that the infections were not caused by the presence of a few cysts which may have been in the inoculum but which were not detected by microscopical examination.

Wagner (*3*) (1935) reported amoebic invasion of the gastric mucosa of the dog. Also, spontaneous infections occurred in normal dogs housed with dogs infected with *Endamoeba histolytica*, suggesting that the infections were produced through contact with the feces containing amoebic trophozoites. To explain this mode of infection, Wagner suggested the possibility of resistant types of trophozoites which might withstand the action of the digestive secretions. Unfortunately, the dogs had been previously fed on liver, which has been shown by Faust and Kagy (*4*) (1934) to produce encystation of amoebae when given to the dog by mouth.

[1] Conducted in part as a project of the Amebiasis Unit of the National Institute of Health at Tulane University.

Deschiens (*5*) (1934) reported unusual resistance of trophozoites to low temperatures and to alternate exposures to high and low temperatures, and noted the possibility of growth and encystment under certain environmental conditions outside the body.

Since several workers have reported failure to infect animals with the trophozoite stage of *Endamoeba histolytica* by the oral route, it is important to determine conclusively whether infection may be produced in the dog by the ingestion of trophozoites and under what conditions this may occur. According to Wright (*6*) (1936), in something less than 5 percent of normal subjects with no symptoms of indigestion no HCl whatever is secreted. Furthermore, the constituents of the gastric juice vary under certain conditions. Whether the ingestion of trophozoites of *E. histolytica* will produce infection in cases of achlorhydria, in the fasting stomach, or under various degrees of gastric stimulation, is not known.

The following experimental studies were designed to determine whether infection may be produced in the dog by the ingestion of trophozoites of *Endamoeba histolytica*. Also, attempts were made to determine the concentration of free and combined HCl which trophozoites may withstand *in vivo*.

Twenty-seven healthy young dogs, free from natural amoebic infection, were used in this study. Dogs experimentally infected with a human strain of *Endamoeba histolytica* provided the material used for the inoculations. This strain has been maintained in dogs for 3 years. It should be noted that the dog almost invariably passes only trophozoites in its stools, although Andrews (*7*) (1932) has reported cysts of a dysentery-producing amoeba in a dog at Baltimore, and Faust and Kagy (*4*) (1934) have shown that dogs on a liver diet may pass cysts in their stools. In studies on the effect of various foodstuffs on amoebic lesions, Faust (unpublished data, cited in Faust, Scott and Swartzwelder, 1934) (*8*) demonstrated that a salmon diet tended to produce a fulminating dysentery in amoeba-infected dogs, and that cysts were never seen in the stools of these animals. The animals which provided the inocula in the present study were fed on a salmon diet to exacerbate the infections as an additional precaution against the presence of cysts in their excreta. A dysenteric condition developed in each of these animals; in fact, some donor animals died from the infection during the experimental work, and Faust and Swartzwelder (*9*) (1935) reported that one animal harbored an infection with this strain for 1½ years, without need for exacerbation by dietary means. The material used for inoculation was obtained by aspiration of blood and mucus containing active trophozoites from various levels of the large intestine by means of a long glass tube and syringe bulb (Faust, 1931) (*10*). This material was carefully examined to make certain that neither cysts nor precystic forms were present, and invariably not a single cyst or precyst was observed.

Eight dogs were inoculated *per os* with 5 to 10 cc of material containing only active trophozoites of *Endamoeba histolytica*, to determine whether the inoculum could pass through the stomach and small intestine in a viable condition. The inocula were administered either in distilled water or without any fluid, and on a fasting stomach (12 to 24 hours after the last feed). The animals were sacrificed from 15 minutes to 1½ hours after inoculation, and in all dogs active trophozoites were found either in the stomach or small intestine. Many of these forms were successfully cultured on liver-infusion agar-slants (Cleveland and Collier, 1930) (*11*), indicating that, in the dog, trophozoites which are ingested on a fasting stomach may pass through the stomach and reach the ileum in a viable condition. In some of the eight animals, active trophozoites were present in a medium which gave a positive reaction for free acid. No cyst formation was noted during the passage of the amoebae through the stomach, although trophozoites which had rounded up were frequently observed in the stomach and duodenum. Degenerate amoebae also were observed in the stomach of these animals.

Attempts were made to produce infection (i. e., tissue invasion) by feeding recipient dogs motile trophozoites of *Endamoeba histolytica* obtained from donor dogs on a salmon diet. A small volume (3 to 7 cc) of material containing numerous amoebae was used to inoculate the animals in order that positive results would not be attributed to overloading the stomach with infective material. Amoebic infection was produced in 5 of 13 dogs which were fed trophozoites in a medium free from cysts. The inoculations were usually made from 3 to 24 hours after the last feed, but in a few cases the inoculum was administered shortly before the animal was given its daily ration of food. The incubation periods for the five infected dogs ranged from 4 to 16 days. This is apparently the first time that infection with trophozoites *per os* has been produced experimentally in dogs, where every step in the procedure was checked and a parallel series of uninfected animals was maintained as controls.

Since dogs may ingest their own feces or those of other dogs, it is possible that natural amoebic infection in canines is not always of direct human origin. Epidemics of amoebic dysentery among dogs might well be explained by the rapid anus-to-mouth transmission of the infection from one animal to another. The oral method of inoculation with trophozoites provides also additional evidence of biological interest. Apparently there is no need for the interpolation of a cyst stage with that of the vegetative or trophic form of this amoeba to insure the continuance of its existence *in vivo*. The ability of Faust (*10*) (1931) to produce amoebic infection in dogs by intracecal inoculation with trophozoites of *Endamoeba histolytica* also provides evidence in favor of this conclusion. Furthermore, active trophozoites,

obtained from the lumen of the large intestine of the dog, apparently have the ability to invade tissue, since they proved infective when given *per os* to other animals.

In a series of five dogs, attempts were made to determine the degree of resistance of trophozoites to gastric acidity *in vivo*. The animals were fed 100 cc of beef extract and a small quantity of raw meat prior to inoculation in order to stimulate gastric secretion. Samples of the gastric juice were withdrawn and titrated for free and total acidity before and after inoculation, with Töpfer's reagent being used for the former and phenolphthalein for the latter. Viable trophozoites were found in the stomach after exposure for 1 hour to amounts of free HCl requiring from 12 to 40 cc of N/10 NaOH to neutralize 100 cc of gastric juice.

It is possible that at times the resistance of the trophozoites to free acid may be greater than these figures indicate. Viable trophozoites were present in the gastric contents when the total acidity, representing both the free HCl and that which is combined with protein, exceeded the values previously given for free acid. The trophozoites remained active in gastric contents which were negative for free HCl but contained combined acids, but there was a tendency for the amoebae to round up in the presence of free acid. Occasional pseudopodial movement or cultures of these rounded forms indicated that they were viable. Certain amoebae remained viable longer than others. This could not be correlated with the presence or absence of cytoplasmic inclusions. Concentrations of free acid requiring more than 40 cc of N/10 NaOH to neutralize 100 cc of gastric juice were lethal to the trophozoites. Little or no free acid was present in the gastric contents of some animals for a brief period after inoculation, and, since the stomach of the dog frequently empties very rapidly, the lack of free acid during this period may account for infection in some animals. However, the lack of free acid is definitely not necessary for the passage of active trophozoites through the stomach. It should be noted that Dobell (*12*) (1927) found that trophozoites of *Endamoeba histolytica* could survive constant exposure to N/20 HCl at 37° C. *in vitro* for 1 hour, but that they remained viable for only 20 minutes in this concentration of free acid when kept at room temperature. He concluded that the resistance of trophozoites to free acid is at a maximum at body temperature.

In summary, 5 of 13 dogs became infected following the ingestion of trophozoites of *Endamoeba histolytica* in a cyst-free medium. In at least 14 out of 22 animals trophozoites passed through the stomach and small intestine in a viable condition. Trophozoites of *Endamoeba histolytica* were observed to withstand *in vivo* concentrations of free HCl up to amounts requiring 40 cc of N/10NaOH to neutralize 100 cc of gastric juice. High concentrations of combined HCl did not

affect the motility or viability of the trophozoites, although there was a tendency for trophozoites to round up in the presence of free acid.

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PROGRESS IN OYSTER CONDITIONING

With Report of Experiments at the Demonstration Plant, Norfolk, Va.

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Although the subject of shellfish conditioning has been studied for some 20 years, and several plants are being operated successfully on a commercial scale, the industry apparently feels that there should be further proof regarding the need of conditioning shellfish for market and the practicability of any such processing. During the past year the Shellfish Committee of the Engineering Section of the American Public Health Association undertook the task of assembling such data as were available on the design and operation of conditioning plants and presented evidence showing why the matter should receive serious consideration by all who are interested in building up the shellfish industry.

Water storage means (1) holding shellfish in bins or tanks supplied with water of approved purity, (2) storage in floats, or (3) bedding near shore. By cleansing is meant the placing of shellfish in water of an accepted quality at such temperatures and under such conditions that they "drink", thereby eliminating contamination. For many years it has been the practice to transplant oysters and clams from moderately polluted beds to approved areas for cleansing. The more general term of "conditioning" applies to either of the methods discussed or a combination of the two, depending on the nature of the shellstock and how it is to be marketed.

It is well known to the industry that oysters taken from deep waters often lose their liquor unless kept in shallow waters until their muscles

become adjusted to the change in pressure; that unless oysters are given an opportunity to eject the sand, grit, or other irritating material, they open their shell when stored dry and lose their liquor; and that dredged oysters with broken bills usually replace their liquor if held in water for a short period.

At the present time there are less than a dozen conditioning plants in the world operating on a commercial scale. The plant at the Conway station in Wales for the cleansing of mussels has been in operation since 1916. After some 10 years of experimental work a similar plant for cleansing oysters was completed at this station in 1934. In New York the conditioning plant which has been operated by the Bluepoints Company since 1926 is well known, as are the several smaller plants in the neighborhood. In Massachusetts three plants for the cleansing of clams have been built, two of which have been operated since 1931. In New Jersey the State department of health constructed three experimental plants of sufficient size to be operated on a commercial scale and mainly for the purpose of demonstrating to dealers in that State the feasibility of this method as a substitute for storage in natural waters of questionable quality.

In Virginia the State department of health last year adopted the policy that oysters or clams shall not be held in storage on floats in natural waters, except by special permission. A permit is issued when the waters are found by survey to be free from contamination, and when the owner agrees that the float be held in the limited space approved, and when all possible precautions are taken by the employees to prevent contamination of the shellfish. Compliance with these requirements necessitates seeking locations at considerable distances from the packing plants, and sufficiently removed from channels to eliminate the danger of chance contamination from passing boats. Maintenance of floats under such conditions involves items of expense in handling and transporting, and in the risk of loss during a storm.

Notwithstanding the experience elsewhere, the State department of health was not in a position to assure Virginia dealers that the relatively new processing method would be entirely satisfactory on a commercial scale where higher water temperatures prevail during the autumn and early spring. For this reason it was deemed advisable to build a plant of sufficient size to demonstrate the practicability of water storage in tanks and to determine particularly the quantity of water required to maintain enough oxygen in the water for the oysters to function. This is one of the items of cost in this method of plant operation.

DEMONSTRATION PLANT AT NORFOLK, VA.

Under a State-wide project, which had been approved by the Works Progress Administration, it has been possible to build a demonstra-

tion plant on Willoughby Spit in the city of Norfolk. The plant was completed late in November 1936, at a cost of $2,800. Practically the entire cost of construction, of most of the laboratory apparatus and supplies, and of operation has been paid by the Works Progress Administration.

Description of plant.—The plant is a two-story wooden frame structure with concrete foundation and floor, 21 feet by 25 feet in plan and 18 feet high. The first floor contains the pump room, the water storage tank, and the two wooden conditioning tanks; the upper story contains the laboratory, which is equipped for all chemical and bacteriological examinations desired. The conditioning tanks, which are very similar to the tanks designed by Dodgson at Conway and explained in his book, *Report of Mussel Purification*, are of two different sizes. The larger is 8 feet long by 4 feet wide and 3 feet high; the smaller, 4 feet by 2 feet and 3 feet high. Both are of the same design, with false grated bottom raised 4 inches off the true bottom, which has a slope of 1:50, and penstock gates to flush out the debris, sedimentation, and feces without removing the oysters. One of these tanks is so equipped that air can be forced through the water in the tank. Sea water is pumped into the water-storage tank by means of a 2½-inch suction intake line extending about 50 feet into the water. The pump used is a 50-g. p. m. centrifugal pump, to which is attached an air pump. The intake is in that part of Hampton Roads which has been restricted, for some 10 years by the State department of health, for the removal of shellfish.

The most probable number (M. P. N.) of the coli-aerogenes group in 100 cc ranged from 9 to 460, with a median of 90 during these experiments. This is equivalent to approximately 50 percent of the 1-cc tubes being positive for the coli-aerogenes group. As the water is flowing into the storage tank, a chlorine solution made from a standard commercial hypochlorite is allowed to mix with the water to sterilize it. A thorough mix is assured by means of a round-the-end baffle arrangement at the influent end. At the effluent end the same type of arrangement will rid the water of excess chlorine by the addition of sodium thiosulphate, if so desired. This storage tank, which holds 1,440 gallons, is divided into two parts so that as the water flows into the conditioning tank it can be aerated by means of air being pumped through diffuser tubes. Since the storage tank is at a higher elevation than the conditioning tanks, flow is by gravity to them. This water was of United States Public Health Service drinking-standard purity.

DISCUSSION OF WATER STORAGE

It was decided to determine, first, the amount of water required by oysters when stored for varying periods at varying temperatures in

order to maintain sufficient oxygen in the water to insure natural activity, namely, "drinking"; for the oyster is conditioned and cleansed not by the chlorine in the water but by its own biological and physiological activity. In short, man sterilizes the water; the oyster cleans and conditions itself—if placed in the proper environment.

In 1914, Round (*1*) observed that oysters will actively eliminate bacteria at all temperatures above 48° F., but at 41° F. there is no reduction in the number of bacteria until after 5 days. In 1921, T. C. Nelson (*2*) reported that between 42° F. and 45° F. lies a "critical temperature" above which there is active feeding and below which almost no food is taken. In the 1925 Annual Report on Sea Fisheries (England and Wales), 46° F. is given as the temperature below which the voiding of the contents of the alimentary canal ceased to be general, although a majority of the oysters in the cleansing tank showed signs of physiological activity down to about 40° F. Galtsoff (*3*), in 1928, concluded that hibernating oysters do not exhibit any adaptation to low temperatures and that they begin to produce a current as soon as the temperature rises above the critical point. In the majority of oysters the current begins to flow when the temperature reaches 46.5° F. J. R. Nelson (*4*) stated in 1934 that, where cleaning is desired in 10 or 12 hours, a temperature of 50° F. or slightly higher is desirable; but a period of 24 hours or more is required when the temperature is below 50° F. but above 41° F. At the Bluepoints Plant, West Sayville, N. Y., it has been found that when the temperature in the tanks drops below 58° F., 7 to 10 gallons of water per bushel of oysters per hour is sufficient when oysters are stored for a week or more.

The oysters used for the present studies were tonged from approved areas, generally, and transported in baskets to the plant by boat. Before being placed in the tanks, the oysters were hosed with water under pressure, "culled", measured, and placed in the tank to a depth of 6 to 8 inches. In 20 of the runs the quantity of oysters used varied between 6¾ and 9 bushels. In five runs it was approximately 1¼ bushels. The Virginia oyster bushel, the measure which was used, as defined by law is 1¾ cubic feet. Water which had been chlorinated and in which the chlorine had been allowed to disappear was permitted to flow into the tanks to the desired depths. The fill and draw method was used during the entire study. Temperature readings, dissolved oxygen content, activity of the oysters, bacteriological examination of water and oysters, and other pertinent observations were made periodically.

In determining the dissolved oxygen content of the water, the Winkler method, as specified by Standard Methods, was used. This proved satisfactory, since the sea water had little oxidizable matter and no other interfering substance. In computing the amount of

oxygen consumed by the oysters, no correction was made for the absorption of oxygen from the air by the water.

The bacteriological examinations of the oysters were made from a composite sample of the shell liquor of five to seven oysters. Examinations of water samples for bacteriological density were also made according to Standard Methods.

Temperature readings varied from 41° F. to 55° F. No attempt at first was made to regulate the temperature, although this was done later. There is a definite correlation between the amount of water that the oysters "drink" and the temperature, which can be measured by the amount of dissolved oxygen that they consume. It

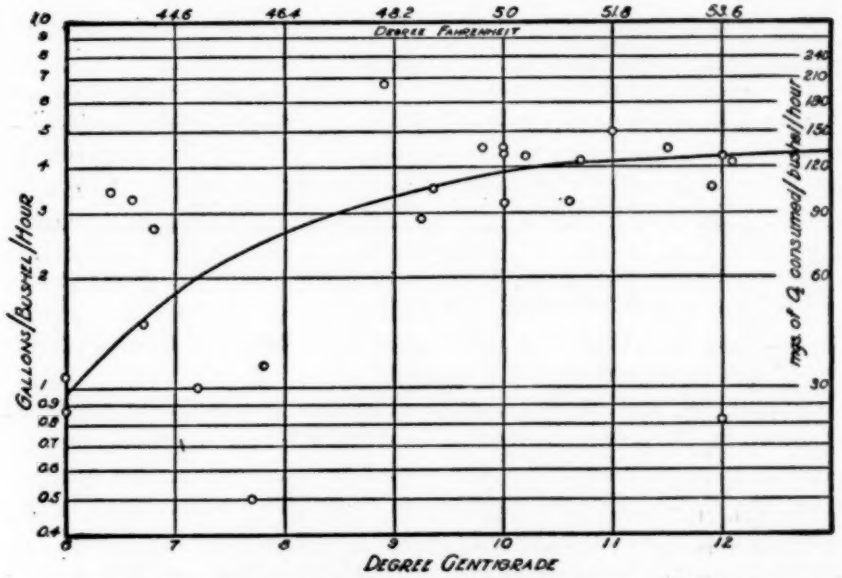

FIGURE 1.—Gallons of water required to keep oxygen content constant (assuming that the water contains 8.0 p. p. m. (30 mg/gal) of dissolved oxygen).

is also believed that the amount the oysters "drink" can be measured by the time it takes oysters to remove the turbidity from a water.

As can be seen in table 1 and figure 1, about 120 milligrams of dissolved oxygen were consumed per bushel of oysters per hour at 50° F., approximately 100 milligrams at 48° F., and 75 milligrams at 46° F. At temperatures below 46° F., the milligrams of oxygen consumed per bushel per hour decreases rapidly, although not uniformly.

If it is assumed that we were to have continuous flow, and that the incoming water contained 8 parts per million of dissolved oxygen (say 30 milligrams per gallon of water), then the amount of water which would be necessary to keep the dissolved oxygen content at a constant level would be about 4.0 gallons per bushel of oysters per hour at a temperature of 50° F., approximately 3.3 gallons at 48° F., and 2.5 gallons at 46° F.

TABLE 1.—*Milligrams of dissolved oxygen consumed per bushel of oysters per hour at different temperatures*

Average temperature range		Number of runs	Milligrams of O_2 consumed per bushel per hour		
°C.	°F.		Maximum	Minimum	Median
5.9 to 7.8	42.6 to 46.1	9	103	15	35
8.9 to 9.8	48 to 49.6	4	202	87	122
10 to 10.7	50 to 51.2	6	134	96	126
11 to 12.1	51.8 to 53.8	5	148	104	128

TABLE 2.—*Water required in gallons per bushel of oysters per hour at different temperatures to keep dissolved oxygen at constant level*

Average temperature range		Number of runs	Gallons of water required per bushel per hour		
°C.	°F.		Maximum	Minimum	Median
5.9 to 7.8	42.6 to 46.1	9	3.4	0.5	1.1
8.9 to 9.8	48 to 49.6	4	6.7	2.9	4.1
10 to 10.7	50 to 51.2	6	4.5	3.2	4.2
11 to 12.1	51.8 to 53.8	5	4.9	3.5	4.3

The mortality, based on numbers of oysters during any given run, varied from 5 to 0.5 percent; the median being 1.4 percent. With a conditioning period of not more than 72 hours, the mortality rate should not be in excess of 1.5 percent.

Graphically, the results of each individual run may be expressed as shown in the accompanying sample graphs, runs 8*a*, 8*b*, 8*c*, and 8*d*, and run 11 (figs. 2 and 3). The solid line represents actual observations, the dotted line represents the computed observations, which were calculated so that the rate in one graph may be compared with that of another. The broken line, without circles for points, represents the temperature. The graph in figure 1 is the summation of all these runs.

From these tables and graphs it will be noted that at 48° F. the oysters were active, as indicated by their consumption of oxygen. This finding has a practical application of vital concern to dealers who transplant oysters during the autumn and spring months to approved areas for cleansing. Undoubtedly the requirement that oysters remain in clean waters a period of not less than 30 days when the temperature ranges between 50° F. and 60° F. is unnecessarily conservative. Accepting the opinion, on which there seems to be general agreement, that oysters clean themselves naturally when drinking uncontaminated water, the results obtained (tables 1, 2, and 3) seem to indicate strongly that a much shorter period than 30 days would be safe.

CLEANSING IN TANKS

Until early in March, bacteriological determinations were only incidental, the scores, except in two instances, being very low. Since then the work carried out has been for the main purpose of determining

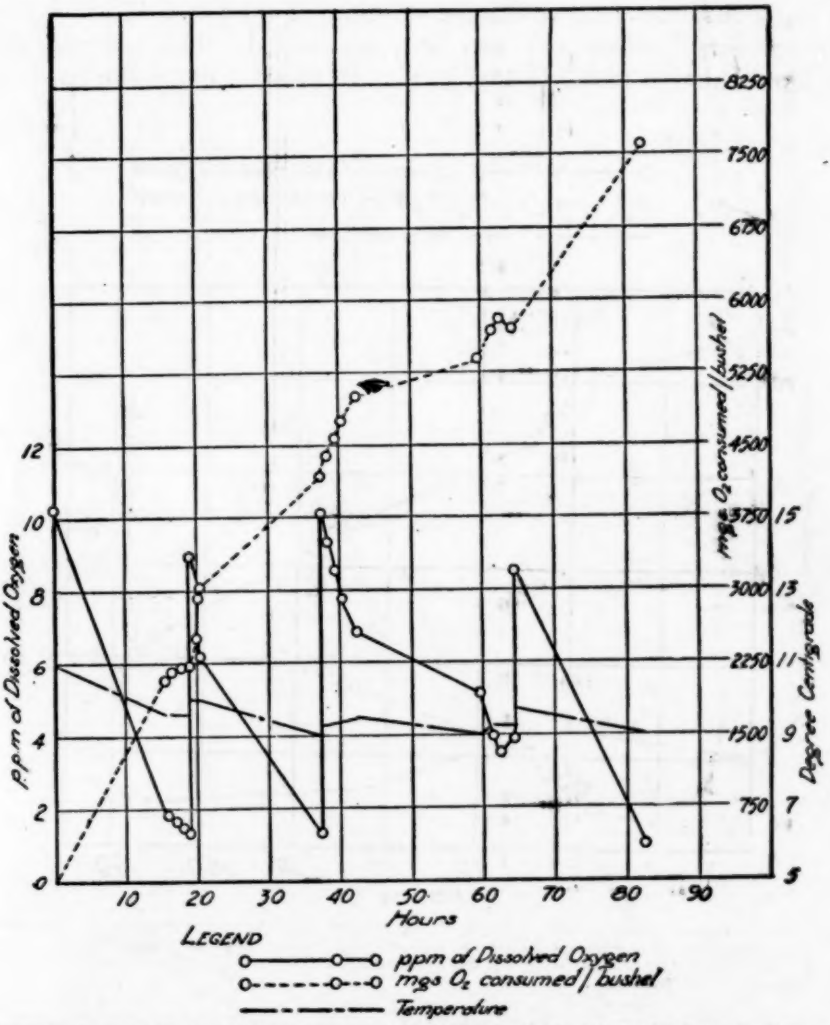

FIGURE 2.—Runs 8a, 8b, 8c, and 8d. Temperature, 9.0°-11.0° C. (48.2°-51.8° F.). Salinity, 1.010 sp. gr. Gallons of water, 553, 552, 535, and 550. Bushels of oysters, 8.25. Oysters tonged from waters with temperature of 11° C. (51.8° F.), salinity, 1.009 (Lot 5). Oysters placed in tank within 6 hours from time of tonging. Turbidity removed in 2 hours on second stage of run. Time, 5 p. m. January 26, 1937. Mortality, 1.1 percent.

how quickly oysters are cleansed in water storage. So far, four separate lots of 1¼ bushels each, and one lot of 9 bushels have been used for study. The oysters used for these investigations were obtained either from known polluted areas or from approved areas and artificially contaminated.

The oysters were hosed thoroughly, "culled", measured, and placed in the conditioning tanks. Chlorinated sea water to which additional chlorine was added was allowed to flow into the tank until the oysters were covered. The residual chlorine was then between 3 and 5 p. p. m. After allowing this to stand for 20 to 30 minutes, the purpose of which is to sterilize the shell, additional chlorinated sea water, in which the free chlorine content was very low, was added. This reduced the residual chlorine to 0.5 to 1 p. p. m. In about 3 hours the residual

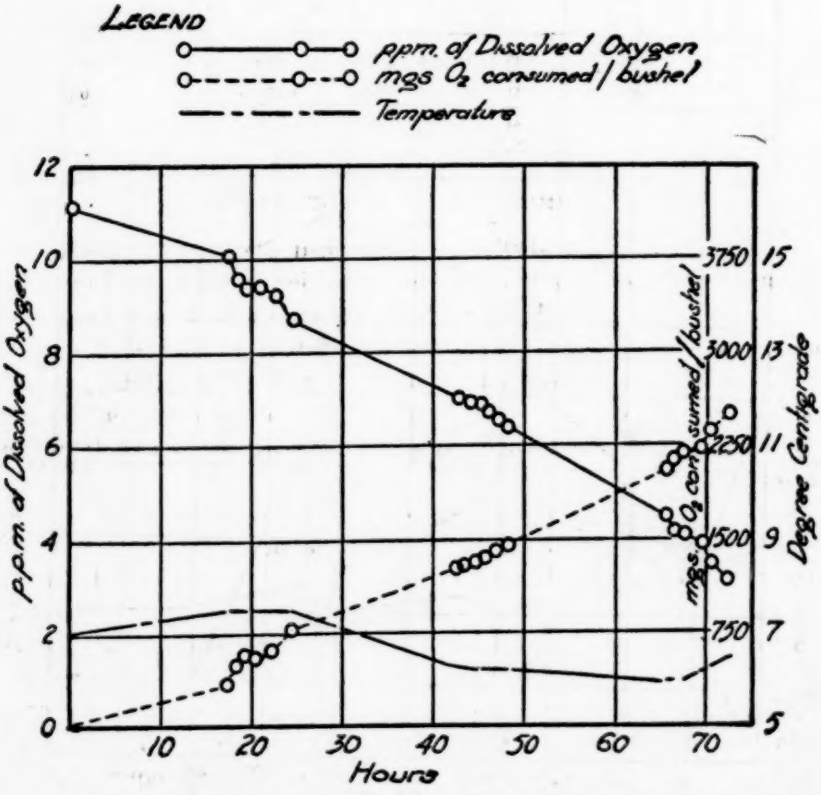

FIGURE 3.—Run 11. Temperature, 5.9°–7.5° C. (42.6°–45.5° F.). Salinity, 1.0125 sp. gr. Gallons of water, 551. Bushels of oysters, 6.75 (Lot 8). Oysters taken from commercial tonging boat; dry storage of 4 days before start of run. Time, 4 p. m., February 15, 1937. Turbidity removed in 48 to 65 hours. Mortality, 3.7 percent.

chlorine had disappeared, so that the oysters could function normally. The temperatures used varied from 49° F. to 55° F. In practice, it would be advisable to drain off the heavily chlorinated water and then add the sea water of United States Public Health Service drinking-standard purity. This would save about 3 hours per run. Although the fill and draw system was used in these studies, it might, in practice, be advisable to have continuous flow.

The bacteriological reduction of the coli-aerogenes density in the shell liquor of oysters kept in the conditioning tanks for a period of 24

hours and greater was between 96 and 98 percent when the oysters were moderately polluted, as shown in table 3.

TABLE 3.—*Bacteriological reduction during period of conditioning*

Lot no.	Average temperature (°F.)	Hours of run	Bacteriological test, coli-aerogenes in shell liquor				Percent reduction of coli-aerogenes
			Start		End		
			Score	M. P. N.	Score	M. P. N.	
1	49	24	230	5,400	50	210	96
2	51	6	5	170	0	0	----------
3	51	72	500	17,000	14	330	98
4	50	6	3	78	0	0	----------
5	54	45	320	9,200	4	130	98

SUMMARY AND CONCLUSIONS

(1) Conditioning of shellfish is practiced for the purpose of improving the appearance and keeping qualities and for the removal of slight contamination which may be present. Methods most commonly used consist of (1) relaying shellfish from doubtful areas to clean waters, (2) storage on floats in approved locations, and (3) more recently, storage for varying periods (depending on the purpose in view) in water-tight tanks containing sea water free from contamination.

(2) In order to demonstrate that conditioning in tanks is practical for climatic conditions in Virginia, a plant was built on Willoughby Spit in Norfolk in 1936, sufficiently large to condition approximately 9 bushels at a time. During the 5 months of study, 165 bushels of oysters have been used in these studies, with water temperatures ranging from 41° to 55° F.

(3) It has been found that for conditioning oysters as they would be in commercial practice about 4 gallons of water per bushel of oysters per hour at a water temperature of 50° F. are required; below this the requirements are approximately 3⅓ gallons at 48° F. and 2½ gallons at 46° F. At lower temperatures the quantity of water necessary decreases rapidly. This evidence shows that the oysters have become uniformly active at 48° F. and nearly as active as they are at 53° F.

(4) Results from five bacteriological runs showed reductions of not less than 95 percent in 30 hours at a temperature range between 49° and 53° F.

(5) The evidence points strongly to a modification of the requirements for relaying oysters, and indicates that a shorter period at 50° F. and possibly at 48° F. is safe from a public health standpoint.

(6) It is believed that conditioning in tanks is commercially feas-

ible in a plant having modern equipment, and that a uniformly good product can be had.

ACKNOWLEDGMENTS

The helpful services given by those who have visited the plant and with whom the authors have been in correspondence is gratefully acknowledged, and particularly appreciation is extended to Senior Sanitary Engineer R. E. Tarbett and Sanitary Engineer L. M. Fisher of the Public Health Service, and W. A. Chipman, Yorktown Experimental Station, United States Bureau of Fisheries.

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TREATMENT OF MALARIA WITH SULFONAMIDE[1] COMPOUNDS

The following is believed to be the first report on the use of sulfonamide compounds in the treatment of malaria. It is the translation of a report, by Dr. Amonario Díaz de León, of Cardenas, San Luis Potosi, Mexico, furnished by the Pan American Sanitary Bureau, and is to be published in an early issue of the Boletín, issued by that Bureau. This report is published here with the hope that a cautious use of the drug by others may determine whether or not it has real value in the treatment of malaria. As a matter of precaution, mention is made here that reports of idiosyncrasies to this drug are appearing in the literature and that it may not be free from toxic effects. The report follows:

FIRST CASES OF MALARIA TREATED WITH RUBIAZOL ROUSSEL[2]

In view of the discovery of plasmochin and atabrine after experiments with various colorants, and of the bactericidal properties of

[1] In practically all scientific literature in this country the "ph" in the word "sulphur" and its derivatives has been changed to "f." Therefore, in conformity with almost universal usage, and in the interest of orthographic standardization, this change will be adopted by the Public Health Service. This form has been officially recognized by the American Medical Association and the American Chemical Society, and is used in the latest (eleventh) edition of the Pharmacopoeia of the United States. Backed by the usage in British scientific journals, the Public Health Reports has held to the original spelling in the face of the increasing tendency in America to the simplified form. As the change in spelling involves no loss in the etymological history of the word, it can be adopted with less philological resistance than would be the case if it resulted in a sacrifice of historical root-stems.—Ed.

[2] Rubiazol is the French name of one of the sulfonamide preparations, better known under the trade names of Prontosil and Prontylin.—Ed.

such dyes as Rubiazol Roussel in streptococcic, staphylococcic, and gonococcic infections, Dr. Díaz de León decided to try it in the treatment of malaria, with such completely satisfactory results in his 15 cases of benign tertiary malaria that he believes its antimalarial properties worth further investigation.

Dr. Díaz de León recalls that the treatment of malaria should be adapted to each individual case, after due consideration of the species of the parasite (*vivax*, *falciparum*, *malariae*), its forms (schizont, gamete), the duration of the illness, and the therapeutic properties of the specific drugs—quinine and atabrine (schizontocidal) and plasmochin (gametocidal). The new antimalarial remedy would probably be classed with the former, since it was tried only in the benign tertian form. Dr. Díaz de León describes the first 4 cases of the 15 which he treated, as follows:

The first patient clearly suffered from benign tertian fever, as he underwent three fever attacks and the microscope revealed *P. vivax*. He was given several tablets of Rubiazol, with instructions to take six per day, two after each meal. Five days later he returned for consultation, feeling perfectly well, and having suffered no attacks during that period. He was advised to continue taking Rubiazol, one tablet after each meal, until one bottle had been used, and to report the results, which were excellent.

The second and third cases were in two brothers who had traveled together through a malarial region, and who suffered the first attack of fever on the same day. Before the treatment, an examination revealed *P. vivax* in the blood of both patients. Rubiazol tablets, two after each meal, were prescribed, for 4 days, then one tablet after each meal until the contents of one bottle had been taken. These two patients suffered only the initial attack, before treatment, and became perfectly well. Seven days after the first consultation an examination of the blood was made and no parasite was found.

The fourth case was in a woman coming from a malarial region. She had had an abortion, and 4 days later had suffered from general malaise, lack of appetite, and headache. Three days following these disturbances she felt an intense chill, followed by a very high temperature, ending in copious sweat. This cycle of chill, high fever, and sweat was repeated every third day for six times, the last being one day before she came for examination. Though her diagnosis of "calentura" was corroborated by the symptoms, I proceeded to make a blood smear, staining it with Tribondeau's formula as I had done in the other cases studied, and found unmistakable, abundant parasites of benign tertian. I immediately prescribed Rubiazol tablets according to the system followed in the other cases. On the day following the consultation, when the patient had begun treatment, the last attack appeared (on the day it was due), but lightly, since

the chill was slight, the temperature rose only to 38° C., and disappeared in 3 hours, in contrast to the former attacks which lasted 8 or 10 hours. Because of this attack, on the morning following I gave an intramuscular injection of Rubiazol, without stopping the tablets. The attacks did not return and 7 days after the beginning of treatment the patient returned home decidedly improved and taking only three tablets per day. On the twentieth day I had the opportunity of seeing her completely well. This case was the only one in which a second attack occurred,[a] and even in that attack the effect of the Rubiazol was seen. It was also the only case in which I used this drug by injection.

After having treated 15 cases of benign tertian fever with complete success, I am sure that Rubiazol is an effective, specific drug for this form of malaria. I am waiting to experiment with it in other forms later on, since this year the late arrival of the rains has somewhat modified the incidence of malaria in nearby endemic regions.—*Dr. Amonario Díaz de Leoń*, Cardenas, San Luis Potosi, Mexico. September 8, 1937.

HOW EXPENDITURES FOR SELECTED PUBLIC HEALTH SERVICES ARE APPORTIONED—A CORRECTION

In the article entitled "How Expenditures for Selected Public Health Services Are Apportioned", which appeared in the PUBLIC HEALTH REPORTS, vol. 52, no. 40, issue of October 1, 1937, the figures in the columns headed "Percentage distribution of expenditures" of tables 2 and 3, pages 1387 and 1388, should have been whole numbers instead of decimals.

DEATHS DURING WEEK ENDED SEPT. 25, 1937

[From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Sept. 25, 1937	Corresponding week, 1936
Data from 86 large cities of the United States:		
Total deaths	7,696	7,309
Average for 3 prior years	7,145	
Total deaths, first 38 weeks of year	330,875	331,253
Deaths under 1 year of age	505	551
Average for 3 prior years	533	
Deaths under 1 year of age, first 38 weeks of year	21,346	21,131
Data from industrial insurance companies:		
Policies in force	69,872,337	68,504,572
Number of death claims	11,867	11,065
Death claims per 1,000 policies in force, annual rate	8.9	8.4
Death claims per 1,000 policies, first 38 weeks of year, annual rate	9.9	10.0

[a] Presumably Dr. Díaz de Leoń means here an attack occurring after treatment had begun.—Ed.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

In these and the following tables a zero (0) is to be interpreted to mean that no cases or deaths occurred, while leaders (.....) indicate that cases or deaths may have occurred, although none was reported.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Oct. 2, 1937, and Oct. 3, 1936

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Oct. 2, 1937	Week ended Oct. 3, 1936	Week ended Oct. 2, 1937	Week ended Oct. 3, 1936	Week ended Oct. 2, 1937	Week ended Oct. 3, 1936	Week ended Oct. 2, 1937	Week ended Oct. 3, 1936
New England States:								
Maine	1	.....	.....	.....	8	7	1	0
New Hampshire	.....	.....	.....	.....	1	17	0	0
Vermont	.....	.....	.....	.....	6	3	0	0
Massachusetts	1	5	.....	.....	11	37	0	0
Rhode Island	.....	.....	.....	.....	.....	.....	0	1
Connecticut	3	.....	2	2	5	4	0	1
Middle Atlantic States:								
New York	23	11	[1]12	[1]8	115	42	9	4
New Jersey	7	6	9	7	24	8	0	3
Pennsylvania	19	16	.....	.....	234	23	4	4
East North Central States:								
Ohio	33	34	15	1	94	11	3	7
Indiana	28	17	14	27	3	4	1	0
Illinois	35	18	9	11	45	11	3	5
Michigan	24	9	2	1	15	5	1	4
Wisconsin	2	5	35	17	28	12	1	2
West North Central States:								
Minnesota	3	2	.....	.....	6	5	0	0
Iowa	5	8	5	.....	3	1	0	0
Missouri	38	6	22	28	15	.....	3	2
North Dakota	.....	2	.....	.....	.....	.....	0	0
South Dakota	.....	1	.....	.....	.....	2	0	0
Nebraska	.....	.....	.....	.....	4	1	2	0
Kansas	5	6	2	1	2	2	0	0
South Atlantic States:								
Delaware	.....	.....	.....	.....	.....	2	0	0
Maryland [2]	9	21	3	3	2	4	3	4
District of Columbia	2	11	.....	.....	3	.....	0	5
Virginia	39	25	.....	.....	16	.....	1	0
West Virginia	34	19	5	5	9	.....	1	2
North Carolina	139	112	1	1	21	2	3	4
South Carolina [2]	23	16	122	79	.....	.....	1	1
Georgia [2]	52	40	.....	.....	.....	.....	2	0
Florida [2]	22	7	3	.....	.....	.....	0	0
East South Central States:								
Kentucky	24	32	3	.....	12	3	4	3
Tennessee	39	50	13	10	47	.....	1	2
Alabama [2]	29	35	24	2	1	1	0	0
Mississippi [2]	17	23	.....	.....	.....	.....	1	0

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Oct. 2, 1937, and Oct. 3, 1936—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Oct. 2, 1937	Week ended Oct. 3, 1936	Week ended Oct. 2, 1937	Week ended Oct. 3, 1936	Week ended Oct. 2, 1937	Week ended Oct. 3, 1936	Week ended Oct. 2, 1937	Week ended Oct. 3, 1936
West South Central States:								
Arkansas	20	10	5	----	3	----	3	0
Louisiana [3]	14	18	3	5	1	3	0	1
Oklahoma [4]	7	10	31	26	1	1	1	2
Texas [3]	40	31	135	28	13	4	2	0
Mountain States:								
Montana	----	----	----	----	16	2	1	0
Idaho	----	----	4	6	----	----	0	0
Wyoming	----	----	----	----	9	----	0	0
Colorado	18	6	----	----	8	3	0	1
New Mexico	2	6	----	2	7	9	0	0
Arizona	6	3	18	16	3	3	0	0
Utah [2]	2	----	10	----	95	1	0	0
Pacific States:								
Washington	4	3	----	----	6	4	0	0
Oregon	----	4	11	14	8	3	0	0
California	15	36	16	27	18	30	1	0
Total	784	664	534	327	918	270	53	58
First 39 weeks of year	16,979	17,737	276,830	141,743	245,396	269,282	4,499	6,230

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid and paratyphoid fevers	
	Week ended Oct. 2, 1937	Week ended Oct. 3, 1936	Week ended Oct. 2, 1937	Week ended Oct. 3, 1936	Week ended Oct. 2, 1937	Week ended Oct. 3, 1936	Week ended Oct. 2, 1937	Week ended Oct. 3, 1936
New England States:								
Maine	8	0	4	11	0	0	3	1
New Hampshire	0	0	3	5	0	0	0	0
Vermont	2	0	3	5	0	0	6	0
Massachusetts	16	1	64	57	0	0	3	2
Rhode Island	0	0	8	12	0	0	1	0
Connecticut	8	0	19	8	0	0	2	2
Middle Atlantic States:								
New York	45	6	128	149	0	0	29	21
New Jersey	12	1	45	16	0	0	11	10
Pennsylvania	31	11	149	142	0	0	41	32
East North Central States:								
Ohio	40	40	238	118	1	2	49	41
Indiana	8	3	85	38	2	1	2	11
Illinois	72	70	161	122	1	7	29	32
Michigan	44	15	163	114	0	0	11	5
Wisconsin	34	6	44	102	1	1	2	1
West North Central States:								
Minnesota	28	3	24	27	4	0	4	0
Iowa	18	9	66	33	6	3	11	12
Missouri	20	0	146	14	1	1	41	16
North Dakota	0	2	8	17	3	2	1	3
South Dakota	2	2	9	14	0	0	2	1
Nebraska	18	2	11	12	0	0	0	1
Kansas	26	10	61	27	0	0	8	3
South Atlantic States:								
Delaware	0	0	10	4	0	0	2	2
Maryland [2] [3]	7	1	36	29	0	0	14	10
District of Columbia	2	3	4	8	0	0	1	0
Virginia	1	3	23	17	1	0	18	15
West Virginia	2	7	57	46	1	0	14	15
North Carolina	2	0	88	57	0	0	22	22
South Carolina [3]	0	0	7	4	0	0	11	16
Georgia [3]	2	8	27	13	2	0	9	36
Florida [3]	0	9	2	4	0	0	4	0

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Oct. 2, 1937, and Oct. 3, 1936—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid and paratyphoid fevers	
	Week ended Oct. 2, 1937	Week ended Oct. 3, 1936	Week ended Oct. 2, 1937	Week ended Oct. 3, 1936	Week ended Oct. 2, 1937	Week ended Oct. 3, 1936	Week ended Oct. 2, 1937	Week ended Oct. 3, 1936
East South Central States:								
Kentucky	2	3	57	31	3	0	25	19
Tennessee	4	24	41	45	1	1	11	37
Alabama [2]	1	6	23	17	1	0	6	12
Mississippi [2] [3]	8	4	13	7	0	0	19	3
West South Central States:								
Arkansas	12	0	15	2	0	0	18	5
Louisiana [3]	3	1	4	2	0	0	17	17
Oklahoma [4]	21	2	14	8	2	0	12	7
Texas [3]	26	1	50	32	1	0	31	30
Mountain States:								
Montana	3	1	9	46	5	7	6	3
Idaho	1	0	10	33	6	2	4	1
Wyoming	1	2	3	3	0	3	2	2
Colorado	31	8	18	16	1	0	31	4
New Mexico	0	1	10	6	0	0	24	14
Arizona	0	0	2	5	0	0	0	2
Utah [3]	3	1	16	10	0	3	0	0
Pacific States:								
Washington	6	4	18	33	6	0	1	2
Oregon	3	2	10	23	1	0	4	7
California	30	18	119	120	1	0	12	9
Total	603	290	2,125	1,664	51	33	574	484
First 39 weeks of year	7,724	2,828	172,584	185,639	8,284	6,123	11,766	10,825

[1] New York City only.
[2] Week ended earlier than Saturday.
[3] Typhus fever, week ended Oct. 2, 1937, 55 cases, as follows: Maryland, 1; South Carolina, 2; Georgia, 24; Florida, 3; Alabama, 11; Mississippi, 1; Louisiana, 1; Texas, 12.
[4] Figures for 1936 are exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week:

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
July 1937										
Wisconsin	2	15	42	-------	130	-------	5	219	11	4
August 1937										
Colorado	4	13	1	1	57	1	70	42	2	20
Hawaii Territory	0	8	640	-------	166	-------	1	4	0	6
Oregon	0	11	42	5	16	-------	6	30	15	23
Puerto Rico	2	41	40	1,282	28	2	0	-------	0	6
Vermont	0	-------	-------	-------	1	-------	13	4	0	5
Washington	2	5	4	-------	123	-------	10	44	15	16
Wisconsin	4	6	74	-------	125	-------	56	124	4	10

July 1937

	Cases
Wisconsin:	
Chicken pox	481
Septic sore throat	15
Undulant fever	6
Whooping cough	906

August 1937

	Cases
Chicken pox:	
Colorado	12
Hawaii Territory	38
Oregon	47
Puerto Rico	6
Vermont	11
Washington	56
Wisconsin	129
Conjunctivitis:	
Hawaii Territory	8
Dysentery:	
Colorado (amoebic)	2
Hawaii Territory (amoebic)	1
Hawaii Territory (bacillary)	1
Oregon (amoebic)	2
Puerto Rico	16
Wisconsin (amoebic)	3
Encephalitis, epidemic or lethargic:	
Hawaii Territory	1
Oregon	1
Washington	2
Wisconsin	1
German measles:	
Oregon	8
Washington	2

August 1937—Continued

	Cases
Hookworm disease:	
Hawaii Territory	3
Impetigo contagiosa:	
Colorado	2
Hawaii Territory	34
Oregon	5
Washington	3
Jaundice, infectious:	
Hawaii Territory	13
Oregon	13
Leprosy:	
Hawaii Territory	1
Puerto Rico	1
Mumps:	
Colorado	8
Hawaii Territory	112
Oregon	21
Puerto Rico	3
Vermont	155
Washington	150
Wisconsin	74
Ophthalmia neonatorum:	
Hawaii Territory	2
Paratyphoid fever:	
Oregon	2
Puerperal septicemia:	
Puerto Rico	3
Washington	2
Rabies in animals:	
Washington	17
Rocky Mountain spotted fever:	
Colorado	1
Oregon	2
Washington	1

August 1937—Continued

	Cases
Scabies:	
Oregon	6
Washington	8
Septic sore throat:	
Colorado	1
Oregon	9
Wisconsin	30
Tetanus:	
Hawaii Territory	3
Puerto Rico	10
Tetanus, infantile:	
Puerto Rico	2
Trachoma:	
Hawaii Territory	1
Tularaemia:	
Wisconsin	1
Typhus fever:	
Hawaii Territory	1
Undulant fever:	
Colorado	1
Oregon	3
Vermont	4
Washington	2
Wisconsin	5
Vincent's infection:	
Oregon	8
Whooping cough:	
Colorado	71
Hawaii Territory	15
Oregon	63
Puerto Rico	45
Vermont	33
Washington	251
Wisconsin	903
Yaws:	
Puerto Rico	1

WEEKLY REPORTS FROM CITIES

City reports for week ended Sept. 25, 1937

This table summarizes the reports received weekly from a selected list of 140 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table. Weekly reports are received from about 700 cities, from which the data are tabulated and filed for reference.

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Data for 90 cities:											
5-year average	178	85	17	105	316	445	4	344	94	880	------
Current week [1]	107	53	9	137	346	406	5	302	93	989	------
Maine:											
Portland	0	------	1	0	1	0	0	1	0	14	27
New Hampshire:											
Concord	0	------	0	0	0	0	0	0	0	0	9
Manchester	0	------	0	0	2	0	0	0	0	0	12
Nashua	0	------	0	0	0	0	0	0	0	0	6
Vermont:											
Barre	0	------	0	0	0	0	0	1	0	0	2
Burlington	0	------	0	0	0	0	0	0	0	1	9
Rutland	0	------	0	0	0	0	0	1	0	0	8
Massachusetts:											
Boston	0	------	0	2	14	21	0	6	2	14	175
Fall River	0	------	0	1	2	1	0	2	0	17	28
Springfield	0	------	0	2	1	2	0	0	0	5	29
Worcester	0	------	0	0	1	2	0	0	0	16	35
Rhode Island:											
Pawtucket	0	------	0	0	0	2	0	0	0	0	10
Providence	0	------	1	1	5	2	0	4	0	33	73
Connecticut:											
Bridgeport	0	1	0	0	2	0	0	0	0	0	24
Hartford	0	------	0	0	3	3	0	1	1	2	44
New Haven	0	2	0	0	1	1	0	0	1	1	40
New York:											
Buffalo	0	------	0	0	3	5	0	11	0	9	120
New York	13	11	1	10	56	21	0	68	16	97	1,280
Rochester	0	2	0	0	4	1	0	1	1	7	52
Syracuse	0	------	0	1	5	1	0	1	0	15	55

[1] Figures for Wilmington, N. C., and Spokane, Wash., estimated; reports not received.

City reports for week ended Sept. 25, 1937—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
New Jersey:											
Camden	4	------	0	0	0	2	0	0	3	0	25
Newark	0	------	0	2	1	3	0	5	0	22	79
Trenton	0	------	0	1	3	0	0	1	0	2	33
Pennsylvania:											
Philadelphia	3	1	0	5	20	19	0	13	4	39	422
Pittsburgh	2	------	0	21	14	13	0	10	1	27	203
Reading	0	------	0	0	1	1	0	0	0	1	28
Scranton	0	------	--------	0	------	0	0	-------	0	2	--------
Ohio:											
Cincinnati	2	1	0	0	1	17	0	5	3	22	120
Cleveland	4	7	0	8	5	27	0	10	5	42	183
Columbus	0	------	0	0	1	7	0	2	1	1	80
Toledo	1	1	1	1	3	3	0	3	3	11	67
Indiana:											
Anderson	0	------	1	2	1	5	0	0	0	2	6
Fort Wayne	0	------	0	0	0	3	0	1	0	0	16
Indianapolis	0	------	0	2	5	8	0	3	1	12	100
Muncie	0	------	0	0	0	0	0	0	0	0	24
South Bend	0	------	0	0	0	0	0	0	0	0	9
Terre Haute	0	------	0	0	0	1	0	0	2	0	22
Illinois:											
Alton	1	------	0	0	0	1	0	0	0	0	8
Chicago	17	3	0	15	28	29	0	38	4	54	667
Elgin	0	------	0	0	1	1	0	0	0	0	11
Moline	0	------	0	1	0	0	0	0	0	3	6
Springfield	0	------	0	0	2	3	0	0	0	2	25
Michigan:											
Detroit	5	2	0	7	10	37	0	12	2	82	235
Flint	0	------	0	1	3	10	0	0	0	14	31
Grand Rapids	0	------	0	5	2	7	0	0	0	8	34
Wisconsin:											
Kenosha	0	------	0	1	0	0	0	0	0	0	6
Madison	0	------	0	0	1	1	0	1	0	2	20
Milwaukee	0	------	0	12	5	5	0	2	1	44	114
Racine	0	------	0	0	0	3	0	0	0	2	10
Superior	0	------	0	0	0	0	0	0	0	0	7
Minnesota:											
Duluth	0	------	0	0	0	2	0	1	0	12	18
Minneapolis	1	------	0	1	7	7	2	2	1	15	105
St. Paul	1	------	0	0	6	3	0	2	0	16	62
Iowa:											
Cedar Rapids	0	------	--------	0	-------	0	0	-------	0	2	--------
Davenport	0	------	--------	0	-------	0	0	-------	1	0	--------
Des Moines	1	------	--------	0	-------	2	0	-------	0	0	33
Sioux City	0	------	--------	0	-------	6	0	-------	0	4	--------
Waterloo	0	------	--------	0	-------	3	0	-------	0	0	--------
Missouri:											
Kansas City	2	1	1	0	5	3	0	3	0	3	90
St. Joseph	0	------	0	0	1	2	0	2	0	0	35
St. Louis	6	------	0	11	5	40	0	6	5	5	224
North Dakota:											
Fargo	0	------	0	0	2	1	0	0	0	25	7
Grand Forks	0	------	--------	0	-------	0	0	-------	0	0	--------
Minot	1	------	0	0	0	0	0	0	0	0	9
South Dakota:											
Aberdeen	0	------	--------	1	-------	0	0	-------	0	5	--------
Nebraska:											
Omaha	0	------	1	0	3	1	0	1	0	0	54
Kansas:											
Lawrence	0	------	0	0	0	0	0	0	0	1	5
Topeka	0	------	1	1	2	4	0	0	1	5	26
Wichita	0	------	0	0	4	3	0	1	0	3	30
Delaware:											
Wilmington	0	------	0	0	3	0	0	0	0	4	31
Maryland:											
Baltimore	4	5	1	2	13	4	0	14	4	104	210
Cumberland	0	------	0	1	1	2	0	0	0	0	12
Frederick	0	------	0	0	0	0	0	0	0	0	3
Dist. of Col.:											
Washington	4	------	0	0	7	7	0	5	0	9	158
Virginia:											
Lynchburg	2	------	0	0	1	0	0	0	1	3	11
Norfolk	0	------	0	1	1	0	0	0	0	0	56
Richmond	0	------	0	0	1	3	0	1	1	5	64
Roanoke	2	------	0	0	1	0	0	1	0	2	11

City reports for week ended Sept. 25, 1937—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
West Virginia:											
Charleston	1		0	0	0	0	0	0	0	0	13
Huntington	3			1		1	0		0	0	
Wheeling	0		0	0	0	0	0	0	0	14	18
North Carolina:											
Gastonia	0			0		0	0		0	0	
Raleigh	1		0	0	1	0	0	1	0	0	9
Wilmington											
Winston-Salem	2		0	0	1	4	0	1	1	3	22
South Carolina:											
Charleston	0	1	0	0	1	0	0	1	8	0	25
Florence	0		0	0	0	1	0	0	0	0	5
Greenville	0		0	0	1	0	0	0	0	0	13
Georgia:											
Atlanta	4	5	0	0	6	14	0	2	9	10	90
Brunswick	0		0	0	0	0	0	0	0	0	5
Savannah	2		0	0	1	0	0	2	0	0	25
Florida:											
Miami	0		0	7	1	2	0	1	0	1	27
Tampa	0	1	1	0	1	2	0	0	0	1	21
Kentucky:											
Ashland	1			0		1	0		10	0	
Covington	0		0	0	0	0	0	1	0	5	9
Lexington	0		0	0	1	0	0	2	0	0	10
Louisville	0	3	0	0	4	7	0	4	0	22	56
Tennessee:											
Knoxville	1		0	0	1	0	0	0	4	0	19
Memphis	2		0	3	3	1	0	2	0	7	56
Nashville	1		0	0	1	3	0	2	0	1	42
Alabama:											
Birmingham	3	3	0	0	4	2	0	2	0	1	55
Mobile	0		0	0	0	2	0	0	0	0	20
Montgomery	0			1		1	0		0	0	
Arkansas:											
Fort Smith	0			0		2	0		2	0	
Little Rock	0		0	0	1	1	0	2	0	0	4
Louisiana:											
Lake Charles	0		0	0	0	0	0	0	1	0	10
New Orleans	2	1	0	1	6	1	0	7	3	8	131
Shreveport	0		0	0	3	0	0	3	0	0	49
Oklahoma:											
Muskogee	0		0	0	0	0	0	0	0	0	
Oklahoma City	1		0	0	1	3	0	1	2	1	34
Tulsa	2			0		2	0		0	10	
Texas:											
Dallas	3		0	0	1	4	0	3	0	4	62
Fort Worth	0		0	0	3	3	0	2	1	5	40
Galveston	0		0	0	1	0	0	1	0	0	14
Houston	1		0	0	5	1	0	2	0	0	54
San Antonio	0		0	0	5	0	0	5	1	0	60
Montana:											
Billings	0		0	0	3	0	0	0	0	0	9
Great Falls	0		0	0	1	1	2	0	0	5	5
Helena	0		0	0	0	0	0	0	0	0	3
Missoula	0		0	0	0	2	1	0	0	0	8
Idaho:											
Boise	0		0	0	1	0	0	0	0	0	3
Colorado:											
Colorado Springs	0		0	1	2	3	0	0	0	0	9
Denver	5		0	6	3	6	0	6	2	2	88
Pueblo	1		0	0	1	0	0	0	0	0	10
New Mexico:											
Albuquerque	0		0	1	0	0	0	4	0	3	7
Utah:											
Salt Lake City	0		0	2	3	4	0	0	0	3	34
Washington:											
Seattle	0		1	1	4	0	0	4	2	13	78
Spokane											
Tacoma	0		0	0	4	3	0	0	0	6	31
Oregon:											
Portland	0		0	1	1	0	0	0	0	0	70
Salem	0			0		3	0		0	0	
California:											
Los Angeles	5	1	0	8	16	9	0	13	2	35	297
Sacramento	1	2	0	1	1	1	0	1	1	18	24
San Francisco	1	3	0	1	5	5	0	4	3	35	176

City reports for week ended Sept. 25, 1937—Continued

State and city	Meningococcus meningitis		Poliomyelitis cases
	Cases	Deaths	
Maine:			
Portland	0	0	4
New Hampshire:			
Nashua	0	0	1
Massachusetts:			
Boston	0	0	13
Springfield	0	0	1
Worcester	0	0	1
Rhode Island:			
Providence	0	0	2
Connecticut:			
Hartford	1	0	0
New Haven	0	0	3
New York:			
Buffalo	1	0	2
New York	1	0	26
Rochester	0	0	1
Syracuse	0	0	1
New Jersey:			
Camden	0	0	2
Pennsylvania:			
Philadelphia	3	0	7
Pittsburgh	0	0	1
Ohio:			
Cincinnati	1	0	1
Cleveland	0	0	6
Columbus	0	0	1
Toledo	0	0	1
Indiana:			
Indianapolis	0	0	2
Illinois:			
Chicago	1	1	30
Springfield	0	0	1
Michigan:			
Detroit	0	0	12
Flint	0	0	1
Grand Rapids	0	0	4
Wisconsin:			
Kenosha	0	0	1
Madison	0	0	2
Milwaukee	0	0	13
Racine	0	1	0
Minnesota:			
Duluth	2	0	0
Minneapolis	0	0	20
St. Paul	0	0	13
Iowa:			
Davenport	0	0	1
Des Moines	0	0	2
Missouri:			
Kansas City	0	0	5
St. Joseph	0	0	2
St. Louis	0	0	4
South Dakota:			
Aberdeen	0	0	1
Nebraska:			
Omaha	0	0	2
Kansas:			
Topeka	0	0	3
Wichita	0	0	5
Delaware:			
Wilmington	1	0	1
Maryland:			
Baltimore	1	1	5
District of Columbia:			
Washington	0	0	6
Virginia:			
Norfolk	0	0	1
Richmond	1	0	0
West Virginia:			
Wheeling	0	0	1
Georgia:			
Brunswick	0	0	1
Florida:			
Miami	1	0	1
Kentucky:			
Ashland	1	0	0
Tennessee:			
Memphis	0	0	1
Alabama:			
Birmingham	1	0	0
Arkansas:			
Little Rock	0	0	1
Louisiana:			
New Orleans	0	0	1
Oklahoma:			
Oklahoma City	0	0	2
Texas:			
Houston	1	0	0
San Antonio	0	0	1
Colorado:			
Colorado Springs	0	0	10
Pueblo	0	0	2
Utah:			
Salt Lake City	0	0	1
Oregon:			
Portland	0	0	1
California:			
Los Angeles	1	0	6
Sacramento	0	0	2
San Francisco	0	0	2

Encephalitis, epidemic or lethargic.—Cases: Bridgeport, 1; New York, 4; Toledo, 1; Alton, 1; Sioux City, 2; St. Louis, 65; Norfolk, 1; New Orleans, 1.

Pellagra.—Cases: Newark, 1; Atlanta, 3.

Typhus fever.—Cases: New York, 1; Atlanta, 4; Savannah, 3; Tampa, 1; San Antonio, 1.

FOREIGN AND INSULAR

CZECHOSLOVAKIA

Communicable diseases—July 1937.—During the month of July 1937, certain communicable diseases were reported in Czechoslovakia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax	10	1	Paratyphoid fever	27	2
Cerebrospinal meningitis	11	4	Poliomyelitis	23	2
Chicken pox	81		Puerperal fever	29	6
Diphtheria	1,683	88	Scarlet fever	1,558	18
Dysentery	428	42	Trachoma	97	
Influenza	31	1	Tularaemia	1	
Lethargic encephalitis	1	1	Typhoid fever	731	34
Malaria	732	1			

FINLAND

Communicable diseases—August 1937.—During the month of August 1937, cases of certain communicable diseases were reported in Finland as follows:

Disease	Cases	Disease	Cases
Diphtheria	275	Poliomyelitis	39
Dysentery	17	Scarlet fever	369
Influenza	581	Typhoid fever	40
Paratyphoid fever	135		

ITALY

Communicable diseases—4 weeks ended July 18, 1937.—During the 4 weeks ended July 18, 1937, cases of certain communicable diseases were reported in Italy as follows:

Disease	June 21–27		June 28–July 4		July 5–11		July 12–18	
	Cases	Communes affected	Cases	Communes affected	Cases	Communes affected	Cases	Communes affected
Anthrax	21	20	35	28	28	24	37	33
Cerebrospinal meningitis	20	17	16	16	15	14	16	16
Chicken pox	230	117	148	88	154	97	125	86
Diphtheria	335	173	332	176	321	185	371	211
Dysentery	41	19	48	27	102	27	121	33
Hookworm disease	10	6	18	10	13	10	24	13
Lethargic encephalitis	2	2	2	2			1	1
Measles	1,298	299	1,089	289	964	281	889	303
Mumps	265	99	189	85	223	77	192	85
Paratyphoid fever	90	70	125	77	179	105	208	128
Poliomyelitis	82	50	65	46	82	58	123	90
Puerperal fever	23	22	27	24	34	31	33	31
Scarlet fever	220	99	187	100	196	98	199	94
Typhoid fever	483	259	664	348	822	399	962	503
Undulant fever	151	101	119	84	101	80	109	81
Whooping cough	606	211	709	213	796	246	702	244

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

NOTE.—A table giving current information of the world prevalence of quarantinable diseases appeared in the PUBLIC HEALTH REPORTS for September 24, 1937, pages 1354–1368. A similar cumulative table will appear in the PUBLIC HEALTH REPORTS to be issued October 29, 1937, and thereafter, at least for the time being, in the issue published on the last Friday of each month.

Cholera

China.—Cholera has been reported in China as follows: Dairen, Manchuria, September 29, 1937, 1 case, 1 death; week ended September 25, Hong Kong, 66 cases, 36 deaths, Macao, 16 cases, Shanghai, 655 cases.

Dutch East Indies—Celebes.—During the week ended September 25, 1937, 6 fatal cases of cholera were reported in Celebes, Dutch East Indies.

French Indochina.—During the week ended September 25, 1937, 56 cases of cholera were reported in Haiphong and 320 cases in Tonkin Province, French Indochina.

Japan—Amagasaki.—During the week ended October 2, 1937, 1 case of cholera was reported in Amagasaki, Japan.

Plague

Argentina—Cordoba Province.—During the period September 1 to 15, 1937, 1 case of plague was reported near Cordoba, Cordoba Province, Argentina.

Hawaii—Island of Hawaii—Hamakua District—Hamakua Mill Company Sector.—One rat found on September 21, 1937, in Hamakua Mill Company Sector, Hamakua District, Island of Hawaii, was reported to be plague infected.

Peru.—During the month of August 1937 plague was reported in Peru as follows: Lambayeque Department, 2 cases, 1 death; Libertad Department, 1 case, 1 death.

Smallpox

Panama Canal Zone—Colon.—During the week ended October 2, 1937, 2 cases of smallpox (alastrim) were reported in Colon, Panama Canal Zone.

Yellow Fever

Brazil—Para State.—On August 20, 1937, 1 death from yellow fever was reported in S. Domingos do Capim, Para State, Brazil.

Colombia.—Yellow fever has been reported in Colombia as follows: Cundinamarca Department, Medina, 1 death on August 6, 1937; Yacopi, 1 death on August 12; Santander Department, Rionegro, 1 death on August 2 and 1 death on August 5.

Senegal—Gossas.—During the week ended September 25, 1937, 1 case of yellow fever was reported in Gossas, Senegal.

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